Embedded System – Based Pesticides Spraying Robot

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Abstract: *The agriculture sector is undergoing a transformation with the integration of robotics and automation. One notable development is the emergence of autonomous pesticide spraying robots, designed to enhance precision, efficiency, and sustainability in crop protection practices. This abstract explores the technological advancements, operational mechanisms, and potential implications of these innovative robots. Autonomous pesticide spraying robots leverage cutting-edge technologies such as artificial intelligence, machine learning, and advanced sensors to navigate fields, identify crop areas, and precisely apply pesticides. Equipped with GPS, LiDAR, and cameras, these robots can map fields, detect obstacles, and optimize spraying patterns in real-time, reducing pesticide usage while ensuring effective pest control. Furthermore, the integration of data analytics enables continuous improvement in spraying strategies, tailored to specific crop types, environmental conditions, and pest pressures. The deployment of autonomous spraying robots offers several benefits to farmers, including increased operational efficiency, reduced labor costs, and minimized environmental impact. By eliminating the need for human operators and optimizing pesticide application, these robots contribute to safer working conditions and reduced chemical exposure risks. Moreover, their ability to operate autonomously for extended periods enhances productivity and scalability in large-scale agricultural operations. Additionally, there is a need for comprehensive training and education to enable farmers to effectively integrate these technologies into their existing practices while maximizing their benefits. modern agriculture, offering precision, efficiency, and sustainability in crop protection. As technology continues to evolve and adoption grows, collaboration among stakeholders is essential to address challenges and unlock the full potential of these innovative solutions for the benefit of farmers, consumers, and the environment.*

Keywords: Agriculture,

REFERENCES

[1]. Aishwarya. B. V, Archana G., C. Umayal, 2015 IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development, "Agriculture Robotic Vehicle Based Pesticide Sprayer" (TIAR 2015).

[2]. Amrita Sneha. A, Abirami. E, Ankita. A, Mrs. R. Praveena, Mrs. R. Srimeena, 2015 IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development, "Agricultural Robot for Automatic Ploughing and Seeding" (TIAR 2015).

[3]. Pvr Chaitanya, Dileep Kotte, A. Srinath, K. B. Kalyan, "Development of a Smart Pesticide Spraying Robot," Volume 8, Issue 5, January 2020, ISSN: 2277- 3878, International Journal of Recent Technology and Engineering (IJRTE).

[4]. Peng Jian-sheng, "Intelligent Robot System for Spraying Pesticides", The Open Electrical & Electronic Engineering Journal, 2014, 8, 435-444.

[5]. Ege Ozgul, Ugur Celik, "Design and implementation of Semi-Autonomous Anti-Pesticide Spraying and Insect Repellent Mobile Robot for Agricultural Applications", 2018 5th International Conference on Electrical and Electronics Engineering